



# Kentucky Forestry Economic Impact Report 2012-2013

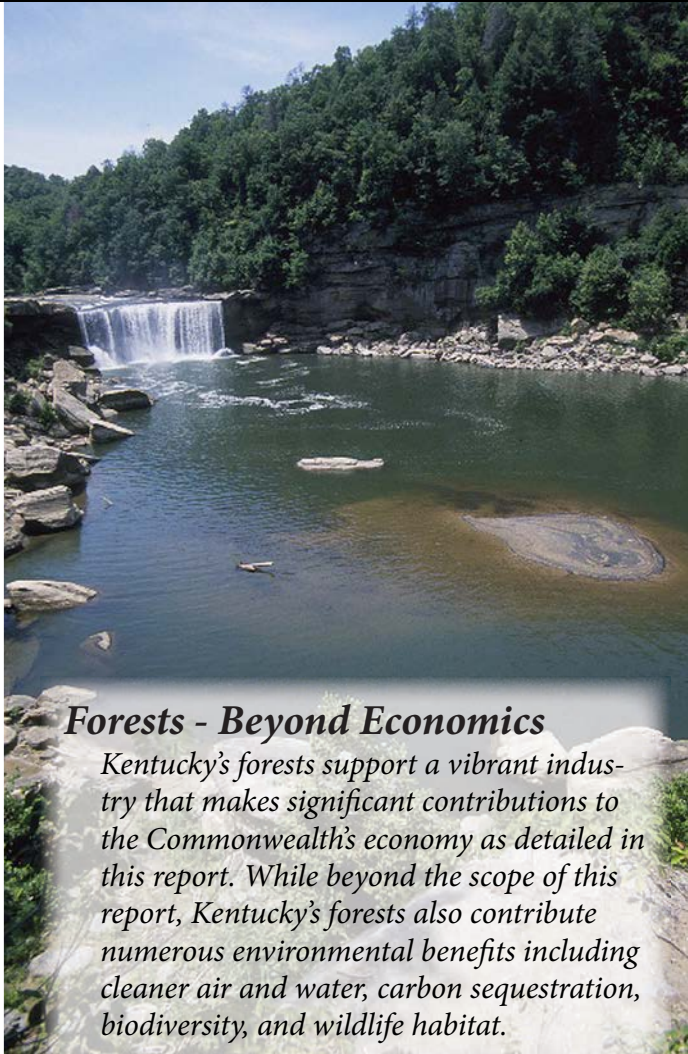
COOPERATIVE  
EXTENSION  
SERVICE

**UK**  
UNIVERSITY OF  
**KENTUCKY**  
College of Agriculture  
**FORESTRY**  
EXTENSION 





# Table of Contents



## ***Forests - Beyond Economics***

*Kentucky's forests support a vibrant industry that makes significant contributions to the Commonwealth's economy as detailed in this report. While beyond the scope of this report, Kentucky's forests also contribute numerous environmental benefits including cleaner air and water, carbon sequestration, biodiversity, and wildlife habitat.*

### ***Economic Data, Analysis***

Economic data were developed specifically for this report and included the use of a variety of credible sources and partners. Overall forestry sector revenue and indirect impacts were developed using statewide IMPLAN data from 2010, the most currently available data and adjusted for 2012 (discussed below). Direct economic impact refers to the economic activity directly associated with an industry sector. Total economic impact refers to the complete economic activity associated with an industry sector and includes direct, indirect, and induced effects. The IMPLAN data was adjusted to provide current year's estimates based on annual employment figures from the Kentucky Forest Products Industry Directory maintained by the University of Kentucky, Department of Forestry Extension and Kentucky Division of Forestry (KDF). The availability of current employment data in our directory also allowed us to adjust other sources of information such as the USDA Forest Service's Timber Product Output data allowing reasonable estimates of current year's outputs. Data from KDF through its Delivered Log and Product Prices via Growing Gold is also essential for this report as is the Forest Inventory Analysis provided jointly by KDF and the U.S. Forest Service. Data from USDA NASS Census of Agriculture, RISI, the Kentucky Master Logger Program, and Kentucky Forest Industry Association members also provided value data used in this report.

<b>Abstract.....</b>	<b>1</b>
<b>Overall Impact.....</b>	<b>2</b>
<b>Economic Impact of Forest and Wood Industries....</b>	<b>3</b>
<b>Timber and Pulpwood Supplies.....</b>	<b>4</b>
<b>Forest Industry and Logging.....</b>	<b>6</b>
<b>Product Pricing.....</b>	<b>7</b>
<b>Exports.....</b>	<b>8</b>
<b>2013 Outlook.....</b>	<b>9</b>

### ***List of Figures:***

- Figure 1** - 2012 Economic and Jobs Impact of Kentucky's Forest and Wood Industry
- Figure 2** - Direct Employment by Kentucky Forestry Sub-Sectors
- Figure 3** - Direct Economic Impact by Kentucky Forestry Sub-Sectors
- Figure 4** - Kentucky Hardwood Sawlog and Veneer Production 1999-2012
- Figure 5** - Percentage of Forests in Kentucky and Sawtimber Volume (Doyle) per Forested Acre in Kentucky
- Figure 6** - Timber Volume Growth and Drain in Kentucky
- Figure 7** - Percentage of Sawtimber Trees on Forestland in Kentucky Classified as Grade 1
- Figure 8** - Distribution of Wood Industries in Kentucky
- Figure 9** - Distribution of Kentucky Master Loggers in Kentucky
- Figure 10** - Delivered Tie Log Prices in Kentucky 2008-2012
- Figure 11** - Delivered Stave Log Prices in Kentucky 2008-2012
- Figure 12** - Delivered Grade 1 Log Prices for Major Species in KY 2001-2012
- Figure 13** - Kentucky's Top 10 Wood, Paper, and Pulp Exports 2012
- Figure 14** - Distribution of Markets for Kentucky's Wood, Paper, and Pulp Exports 2012



# Kentucky Forestry Economic Impact Report 2012-2013

## Authors

Jeff Stringer, Billy Thomas, Bobby Ammerman, Alison Davis<sup>1</sup>

## Abstract

Kentucky plays a pivotal role in providing forest products to the U.S. and the forestry sector is a major economic force in the Commonwealth providing over 51,000 jobs and \$9.9 billion to Kentucky's economy in 2012. This economic input was generated from 708 facilities located in 109 of Kentucky's 120 counties including a wide range of industries from logging and sawmills to cabinet manufacturers and paper and producers. In 2012 Kentucky was one of the largest producers of hardwood timber with over 590 million board feet of sawlogs and over 900,000 tons of pulpwood harvested from private family-owned forests. This report highlights the economic contribution of the forestry sector to Kentucky in 2012 and provides insights to the sectors predicted performance in 2013.

## Acknowledgements

The authors thank Kentucky Division of Forestry personnel Larry Lowe and Chris Nevins for providing necessary and invaluable information to this report; Chris Oswalt with USDA Forest Service's FIA unit in Knoxville; members of the Kentucky Forest Industries Association; and Carroll Fackler, and Terrell Baker with the University of Kentucky, Department of Forestry. A special thanks goes to Reneé Williams, Information Specialist with the University of Kentucky, Department of Forestry Extension for publication graphics and layout.

<sup>1</sup>Extension Professor of Hardwood Silviculture and Forest Operations; Extension Associate for Family Forest Education; and Extension Associate Secondary Forest Industry, University of Kentucky, Department of Forestry Extension respectively, and Associate Extension Professor, University of Kentucky, Department of Agricultural Economics.



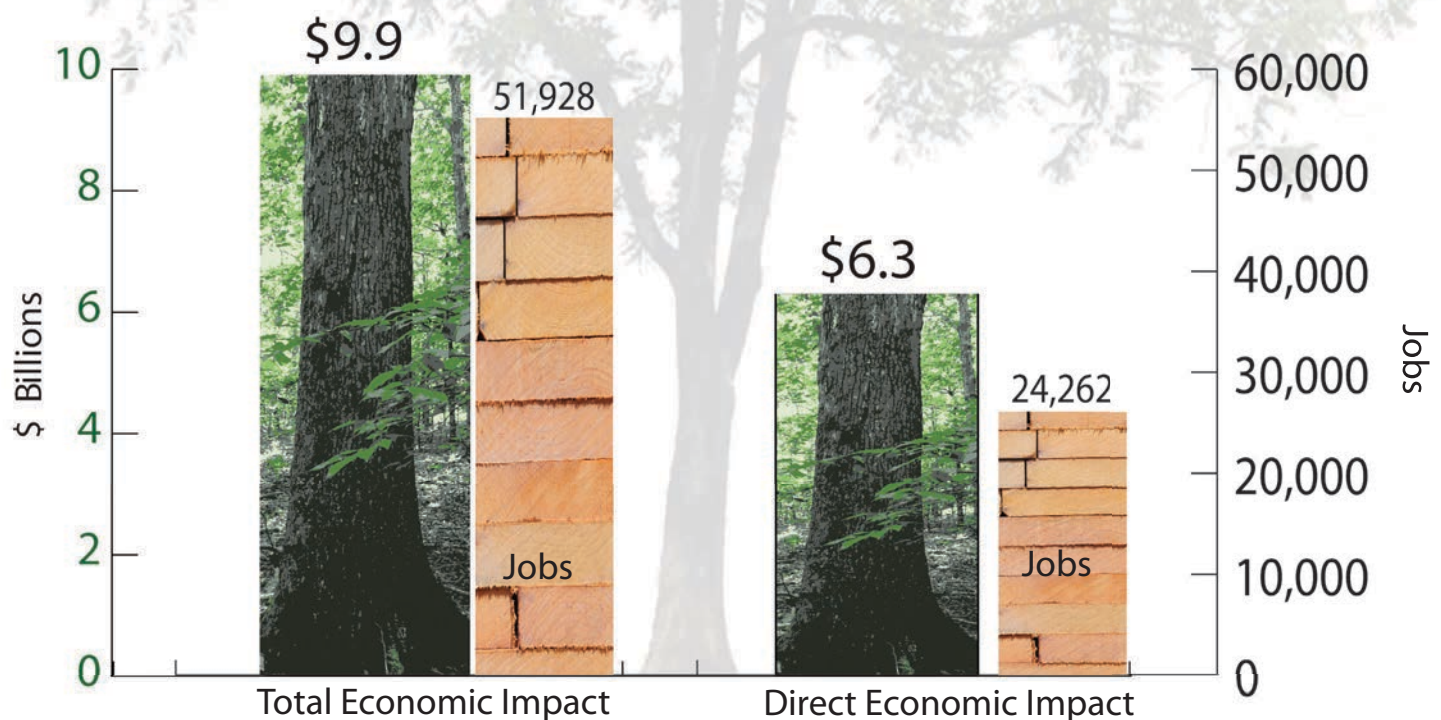
# Overall Impact

The total economic impact of the forestry sector to the Commonwealth of Kentucky in 2012 was \$9.992 billion (Fig. 1). Direct revenue including income from the sector resulted in \$6.357 billion with an additional \$3.635 billion in indirect and induced contributions to Kentucky's economy.

Kentucky's forest industries directly employed 24,262 and the sector was responsible for a total employment of 51,928 or 2.7 percent of Kentucky's jobs and \$1.25 billion in earned income in 2012.

While these economic contributions are significant the soft overall U.S. economy and housing starts directly affected Kentucky's forestry sector in 2012 causing a contraction of 3.7 percent or \$256 million with an associated loss of 942 jobs compared to 2011. The hardest hit was the paper converter sector (manufacturers of paper products) retracting 4.7 percent in 2012.

Figure 1. 2012 Economic and Jobs Impact of Kentucky's Forest and Wood Industry



Source: IMPLAN Data for Kentucky and the Kentucky Forest Products Industry Directory



# Economic Impact of Forest and Wood Industries



The forestry sector encompasses a range of industries including logging, paper production and conversion, and a diversity of wood and finished product industries. These range from industries that saw and produce products including lumber, cross-ties, pallet material, barrel staves, blanks for handles, veneer, and a multitude of other primary products. Kentucky's forestry sector also encompasses a wide range of industries that make finished or secondary products like furniture, trim, flooring, and barrels. Figures 2 and 3 provide a breakdown of the forestry sector into six distinct sub-sectors.

**Logging:** Logging is the smallest, directly employing 2,276 (not including owner/operators) with a direct economic impact of \$164 million. Although the logging industry is relatively small compared to other forestry sub-sectors it plays the pivotal role of supplying the timber resources for the entire sector.

**Solid wood manufacturing:** Solid wood manufacturing, including both primary wood manufacturing (ex. lumber mills) and secondary wood manufacturing (ex. component manufacturing), provided \$2.1 billion in revenue with a total contribution of \$3.68 billion.

**Paper:** Paper represents a sizable portion of the forestry sector with direct revenue at \$3.7 billion with \$900 million from pulp and paper production and \$2.8 billion from paper converters including packaging and industrial and writing paper (not including printers). Total impact attributed to paper was \$5.4 billion in 2012.

**Wood residue:** Wood residue manufacturing was also important in Kentucky providing a total of \$627 million to Kentucky's economy.

Figure 2. Direct Employment by Kentucky Forestry Sub-Sectors

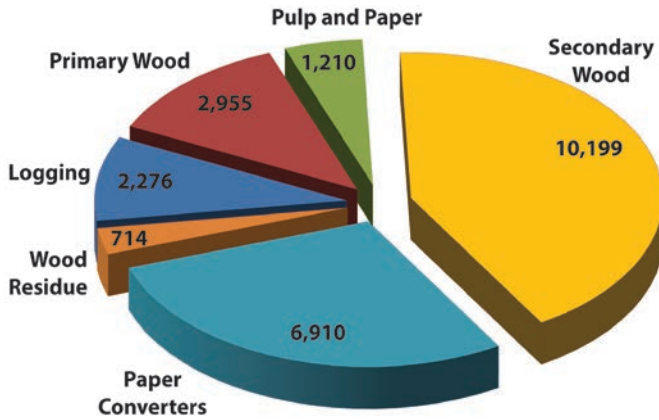
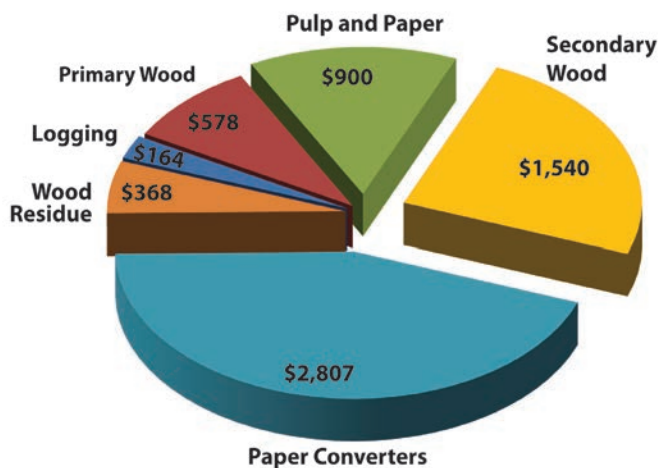


Figure 3. Direct Economic Impact by Kentucky Forestry Sub-Sector in Millions

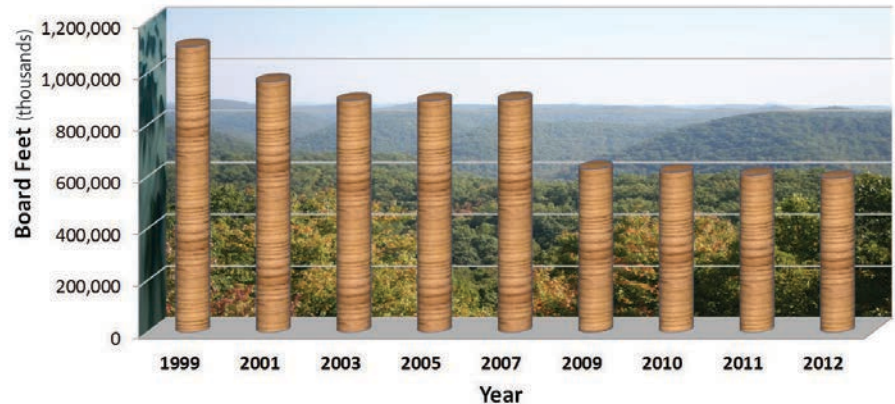


Source Figures 2-3: IMPLAN Data for Kentucky and the Kentucky Forest Products Industry Directory



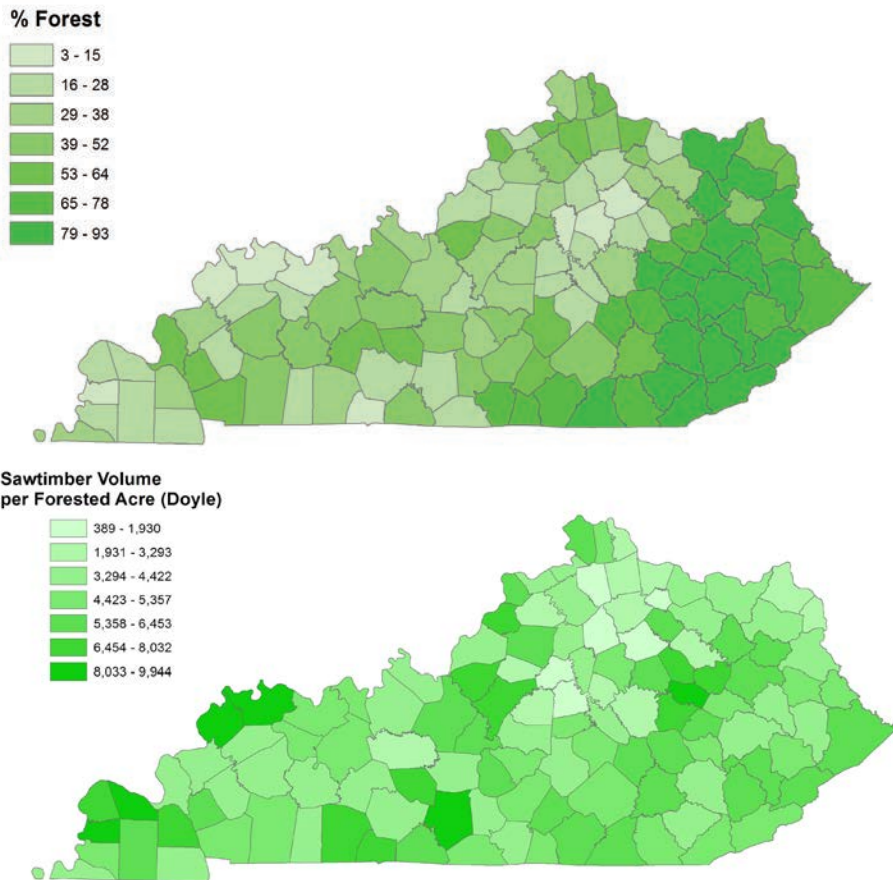
Kentucky is blessed with abundant hardwood forests and the majority of our forest industry is geared to generate hardwood products. In 2012 a total of 593 million board feet of hardwood sawlogs and veneer were produced from Kentucky's forests (Fig. 4). This ranks the Commonwealth as the leading producer of hardwood timber in the South and one of the top three in the U.S. However, this output of hardwood saw and veneer logs is significantly below the recent Kentucky high of 1.1 billion board feet in 1999. The reduced production is a reflection of national trends in housing and the U.S. economy in 2011 and 2012. Annual pulpwood production, the majority being hardwood, remained stable in 2012 at 992,858 tons. The amount of hardwood timber and pulpwood harvested is directly related to the demand by mills which is driven by hardwood product demand and hardwood log and pulpwood supplies. The relatively soft U.S. economy and housing starts in 2012 drove the harvesting with supply exceeding demand in 2012. The value of all delivered round-wood for 2012 is estimated at \$180.6 million dollars and reflects a reduction in cash receipts for woodland owners in 2012 compared to 2011.

**Figure 4. Kentucky Hardwood Sawlog and Veneer Production 1999-2012**



Source: U.S. Forest Service Forest Inventory & Analysis Timber Product Output Data and the Kentucky Forest Products Industry Directory

**Figure 5. Percentage of Forests in Kentucky and Sawtimber Volume (Doyle) per Forested Acre in Kentucky**



Source: U.S. Forest Service Forest Inventory & Analysis Data

The majority of hardwood timber and pulpwood production comes from Kentucky's 12.5 million acres of forest covering 49 percent of the state. While approximately one-half of our forest exists in eastern Kentucky Figure 5 shows that all counties have forestland and that many counties having the highest timber volume per acre are outside of eastern Kentucky. Seventy-five percent of Kentucky's 12.5 million acres of forests was family-owned in 2012. Farms in Kentucky were 22 percent wooded representing



**Sustainable timber harvesting used and improve an oak stand in Kent**



# Pulpwood Supplies

a significant portion (3.1 million acres or 25%) of Kentucky's forests. Family-owned forests, including farms, provided the majority of timber and pulpwood used in Kentucky indicating the importance of timber income to private landowners. Also the volume per acre data along with the broad distribution of forest industries across Kentucky indicates that landowners throughout Kentucky can economically benefit from timber markets.

Current data on forest inventories still indicates positive growth of our forests with growth exceeding removals (Fig. 6). While the positive growth versus drain data indicates a continuing supply of timber, there is a different picture relative to timber quality. Figure 7 indicates a steady decrease in the percent of high quality (grade one) trees in Kentucky from 20.7 percent of the timber volume in 2004 to 12.9 percent in 2011, a 38 percent decrease. This indicates a reduction in trees that are capable of producing high quality (and high value) lumber, veneer, and staves and is particularly interesting to industries vested in the use of these types of logs. Also these high quality logs often provide the revenue platform needed for forest owners and loggers to make harvesting profitable. This data indicates the need for increased management activities geared to increasing high value hardwoods in Kentucky.

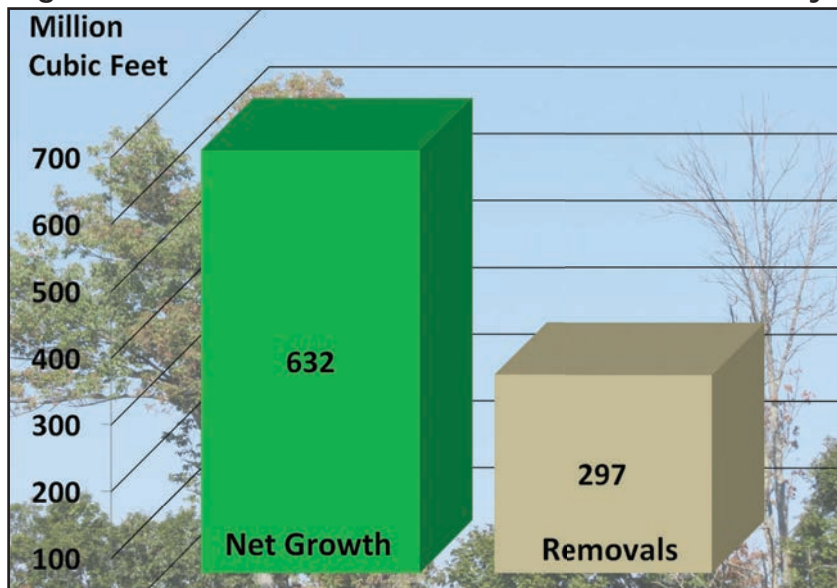


to thin  
tucky.



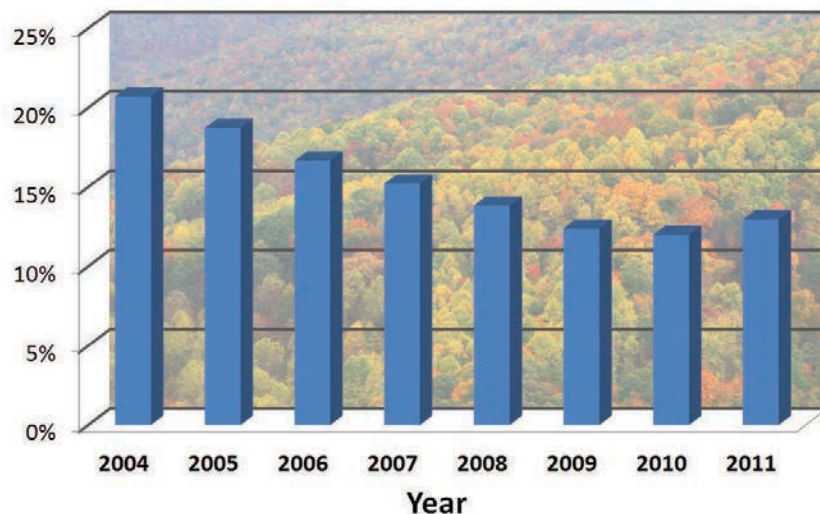
**W**hite oak remains a dominate species in Kentucky providing substantial timber and wildlife benefits. It is used for a wide range of wood products including lumber, veneer, barrels, and cross-ties and its digestible acorns are high quality mast for wildlife.

**Figure 6. Timber Volume Growth and Drain in Kentucky**



Source: U.S. Forest Service Forest Inventory & Analysis Data

**Figure 7. Percentage of Sawtimber Trees on Forestland in Kentucky Classified as Grade 1**

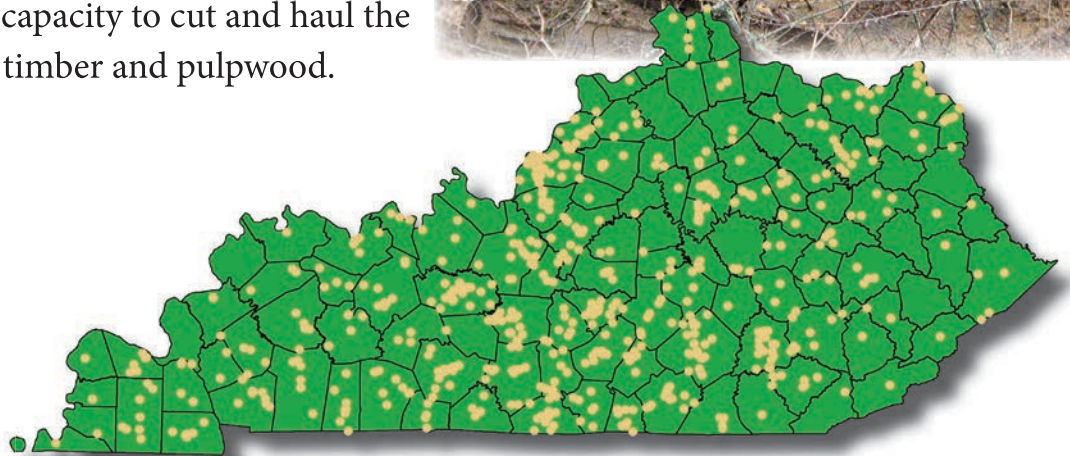


Source: U.S. Forest Service Forest Inventory & Analysis Data



# Forest Industry and Logging

Forest industries included 708 individual facilities in 2012 located in 109 out of Kentucky's 120 counties (Fig. 8). This diffuse distribution indicates the importance of the forestry sector for both urban and most notably rural economies in Kentucky ensuring for allocation of the \$9.9 billion across all regions of the state. Loggers were also well distributed across Kentucky (Fig. 9) with 1,586 logging firms operating in Kentucky in 2012 providing the necessary capacity to cut and haul the Commonwealth's timber and pulpwood.

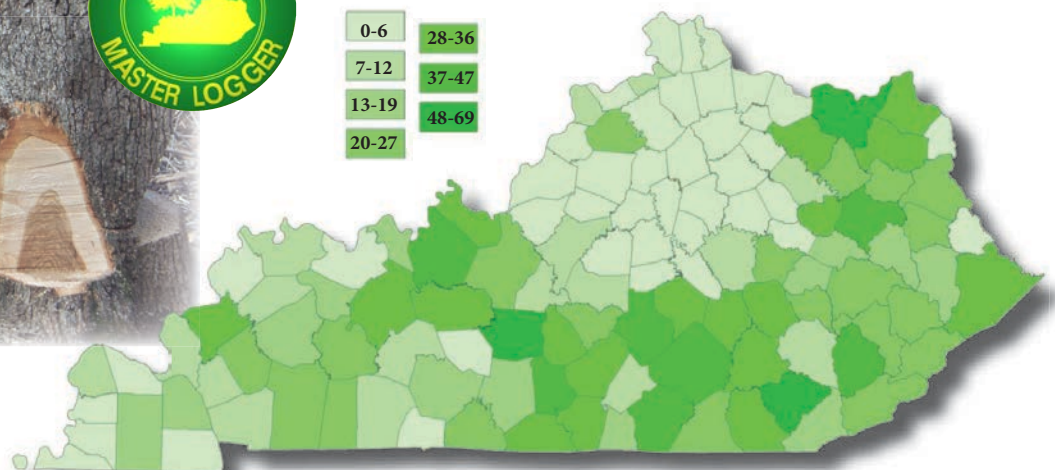


**Figure 8. Distribution of Wood Industries in Kentucky**

Source: Kentucky Forest Products Industry Directory



**Figure 9. Distribution of Kentucky Master Loggers in Kentucky**



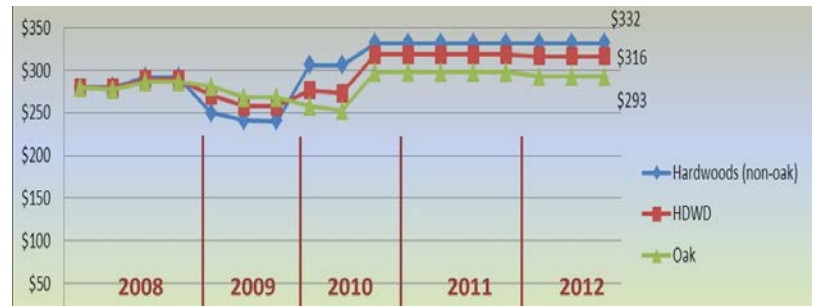
Source: Kentucky Master Logger Data



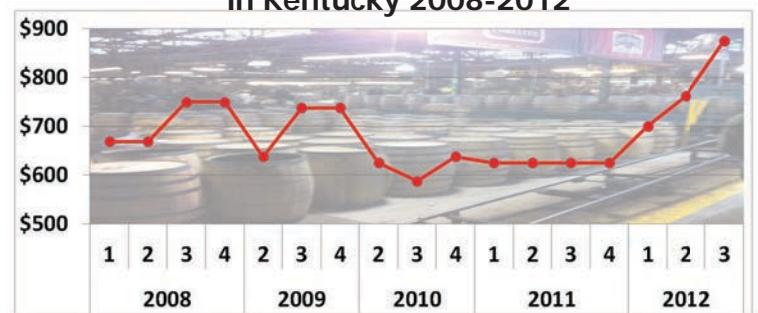
# Product Pricing

While there was a reduction in the total timber cash receipts for woodland owners and farmers, some timber products and species showed price increases or stability in 2012 including railway tie logs (delivered price \$293-\$332 per thousand board feet (MBF)) with hickory commanding the highest prices (Fig. 10). Stave logs, predominately white oak, showed a significant improvement in pricing, rising to \$875 per MBF by the third quarter of 2012, the highest price in several years (Fig. 11). The demand and pricing for both tie and stave logs should remain stable or increase in 2013. Hardwood pulpwood pricing remained stable in 2012 and is projected to continue to do so in 2013. In contrast average prices in 2012 for most sawlogs, including grade 1 logs for lumber production slipped 5 to 15 percent including black walnut and white oak (Fig. 12). Black cherry and red oak sawlogs were the 4<sup>th</sup> and 5<sup>th</sup> most valuable, prices remaining low and stable. In contrast ash sawlogs declined and reached lows in 2012. Soft maples and yellow-poplar were stable but low throughout 2012 with yellow-poplar the lowest valued major species.

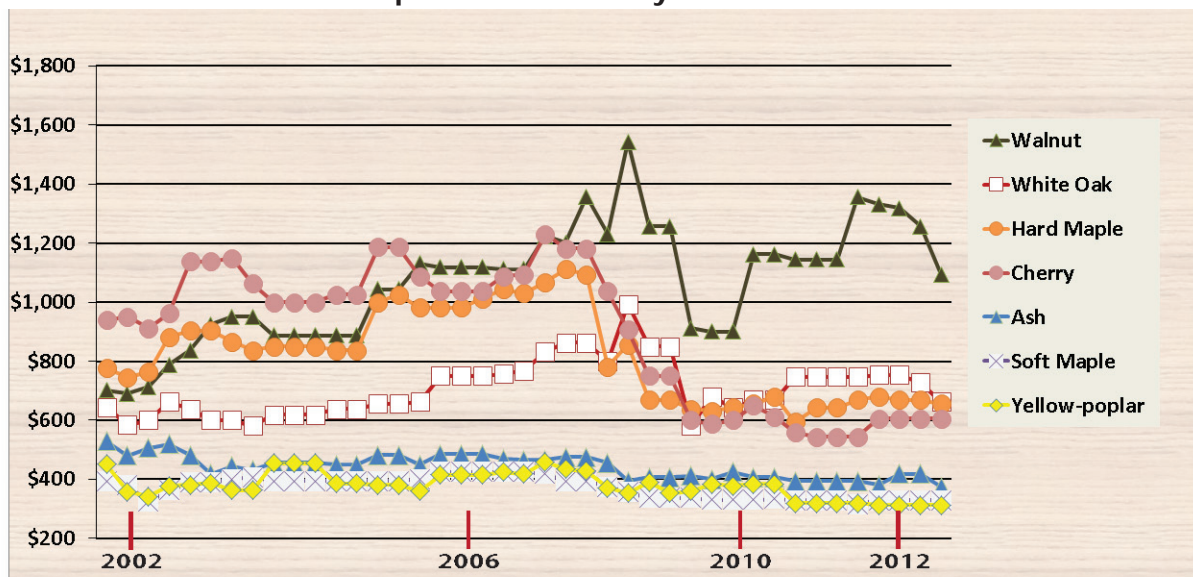
**Figure 10. Delivered Tie Log Prices in Kentucky 2008-2012**



**Figure 11. Delivered Stave Log Prices in Kentucky 2008-2012**



**Figure 12. Delivered Grade 1 Log Prices for Major Species in Kentucky 2001-2012**



Source Figures 10-12: Kentucky Division of Forestry's Growing Gold Delivered Log Price Data

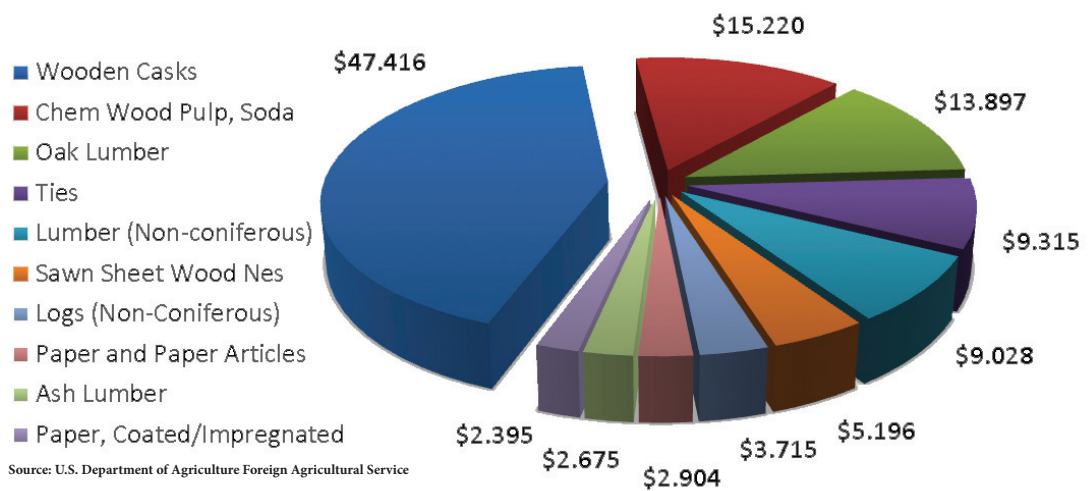




# Exports

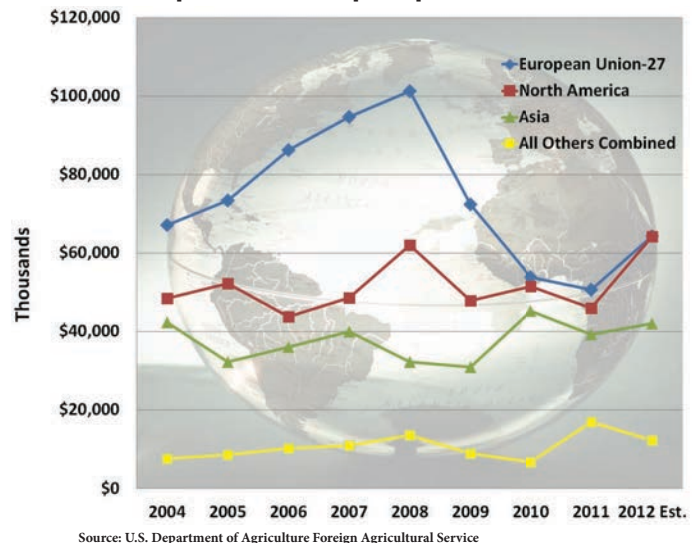
Traditionally the majority of forest products produced in Kentucky have been consumed domestically; however exports have always played an important part of some industries and continued to do so in 2012.

**Figure 13. Kentucky's Top 10 Wood, Paper, and Pulp Exports Jan. - Sept. 2012 (\$Millions)**



Exports topped \$195 million in 2012 with 10 products accounting for approximately 85 percent of the exports (Fig. 13) with wooden casks (barrels) leading the way. Exports were relatively uniformly distributed among the European Union (EU), Asia, and North America (Canada and Mexico) lead by the EU at 36 percent a significant purchaser of used barrels. While the EU was the largest export market for Kentucky's forest products Figure 14 shows the softness of this market compared to years prior to the recession of 2008-2009 when EU exports reached over \$100 million compared to the low of 2011 (approximately \$50 million) and a rebound to \$62 million in 2012.

**Figure 14. Export Value to Markets for Kentucky's Wood, Paper, and Pulp Exports 2004-2012**



# 2013 Outlook

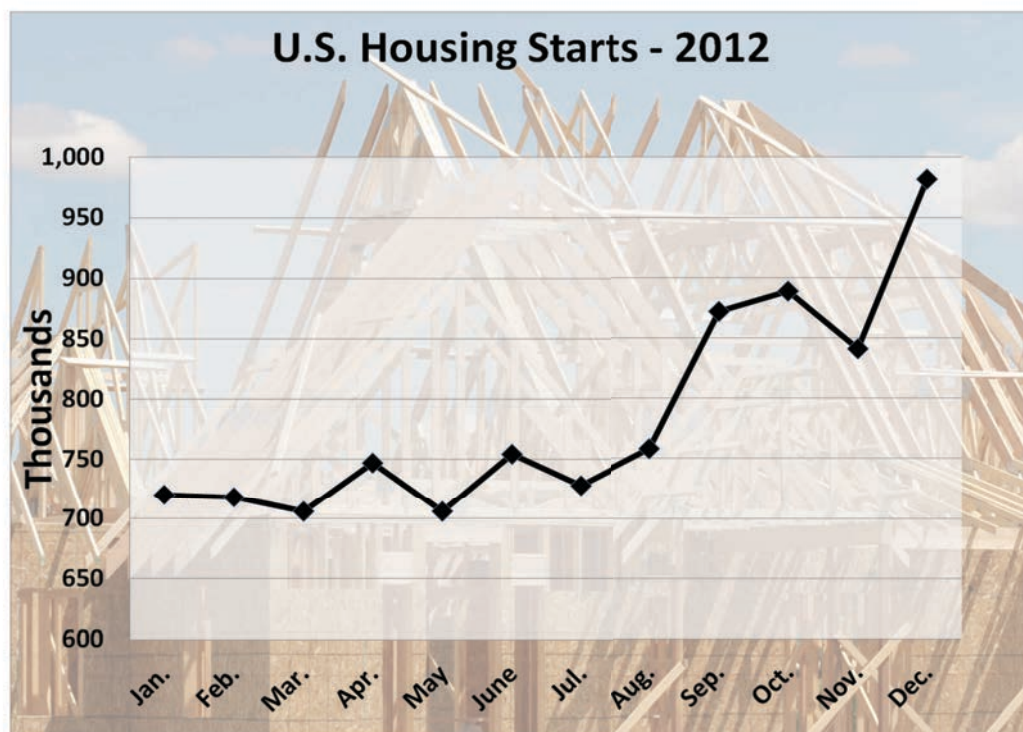
The outlook for 2013 within the forestry sector will be mixed. Indications are that hardwood lumber production and associated industries should stop the declines witnessed over the last several years and potentially show positive growth. However, industries associated with paper consumption may continue to slip. Ultimately the health and rate of improvement of the U.S. economy and indicators of economic vigor directly related to wood use, such as housing, will directly influence Kentucky's forestry sector in 2013. There are numerous indicators of an improving U.S. economy including housing starts indicating anticipated sales for forestry sub-sectors that produce materials for housing and building including for example flooring, trim, cabinetry, windows and doors, tool handles and other associated products. While this will result in increased sales for some of our industries, a dramatic increase in employment is not expected as many industries are currently under-utilizing their workforce. An uptick in primary industries purchasing logs may benefit timber owners as a seller's market may develop in 2013.

While there is generally good news associated with 2013 for our traditional hardwood dimensional industries this news does not transfer to paper. Unfortunately, projections for writing, copier and printing sectors, which drive sales for paper, are expected to continue downward in 2013 with the overall U.S. paper industry estimated to lose another 4 percent. Given the significance of the paper producers and paper converters to the forestry sector in Kentucky, this loss may negate or abate any positive gains in other sub-sectors in 2013.

The logging sector is particularly fragile. While the numbers of loggers has been sufficient to provide timber to our mills over the last several years, increases in demand may outstrip logging capacity in 2013. Kentucky Master Logger numbers have remained relatively stable over recent years however many logging firms have downsized employees and equipment. While the stable numbers indicate that there is potential to respond to an upswing in demand other factors such as relatively low delivered log prices for some of our more important species

such as red oak and relatively high prices for fuel, tires, and parts are depressing logging expansion. This sector is critical to our forestry sector and remains a concern for 2013.

Forest data indicating declines in timber quality combined with stresses on our forest from weather and the continued presence of insect and disease problems indicate the need for improvement in forest management by the private sector. The economic conditions resulting in budget cuts for the Kentucky Division of Forestry (KDF) are an immediate concern.



Source: U.S. Department of Commerce Census Bureau

It is critical that Kentucky's capacity to assist woodland owners and provide for long-term sustainability of forests and timber resources not be diminished. Other federal and state budget cuts also are affecting the capacity of the University of Kentucky, Department of Forestry that provides forestry research, teaching, and extension activities in support of forestry and the wood industry.

Overall Kentucky's forestry sector should start to see some improvements in 2013 especially as it relates to our non-paper related industries. However, this improvement will be tenuous and related directly to the U.S. economy and housing. Further there are some industries such as logging that will need reductions in fuel and parts prices and/or improvements in delivered log and pulpwood prices to see signs of improvement.





*The authors thank the following for allowing use of their photos:*

**Front Cover:**

Thomas Barnes, University of Kentucky Forestry Extension

**Table of Contents:**

John Cox, University of Kentucky Department of Forestry

**Pages 1 - 2**

Reneé Williams, University of Kentucky Forestry Extension

**Page 3**

Paper converters: mpact

Secondary Wood and Wood Residue Manufacturing:

Bobby Ammerman, University of Kentucky Forestry Extension

Primary Wood Manufacturing:

Thomas Barnes, University of Kentucky Forestry Extension

Logging: Jeff Stringer, University of Kentucky Forestry Extension

Pulp and paper: Photo courtesy of Praxair

**Pages 4 - 6**

Jeff Stringer, University of Kentucky Forestry Extension

**Page 7**

Terry Connors, University of Kentucky Forestry Extension

**Back Page**

Thomas Barnes, University of Kentucky Forestry Extension

# FORESTRY EXTENSION

Department of Forestry  
Forestry Extension Office  
University of Kentucky  
216 Thomas Poe Cooper Bldg.  
Lexington, KY 40546-0073  
859.257.7597  
[www.ukforestry.org](http://www.ukforestry.org)

## FORFS 13-03

Educational programs of Kentucky Cooperative Extension serve all people regardless of race, color, age, sex, religion, disability, or national origin. Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, M. Scott Smith, Director of Cooperative Extension Programs, University of Kentucky College of Agriculture, Lexington, and Kentucky State University, Frankfort. Copyright © 2013 for materials developed by University of Kentucky Cooperative Extension. This publication may be reproduced in portions or its entirety for educational or nonprofit purposes only. Permitted users shall give credit to the author(s) and include this copyright notice. Publications are also available on the World Wide Web at [www.ukforestry.org](http://www.ukforestry.org)